Citation:

Merten MJ, Williams AL, Shriver LH. Breakfast consumption in adolescence and young adulthood: parental presence, community context, and obesity. J Am Diet Assoc. 2009 Aug;109(8):1384-91.

PubMed ID: 19631044

Study Design:

Prospective cohort study

Class:

B - Click here for explanation of classification scheme.

Research Design and Implementation Rating:

POSITIVE: See Research Design and Implementation Criteria Checklist below.

Research Purpose:

To assess individuals' breakfast consumption patterns and obesity status during adolescence and young adulthood.

Inclusion Criteria:

- White and African American adolescents
- Those who provided complete data
- Wave 1 = 11 to 18 years of age
- Wave 2 = 12 to 19 years of age
- Wave 3 = 18 to 26 years of age

Exclusion Criteria:

- Those who provided incomplete data
- Individuals under 11 years of age and over 26 years of age

Description of Study Protocol:

Recruitment

Data was derived from the National Longitudinal Study of Adolescent Health, a nationally representative sample of adolescents. A sample of 134 middle and high schools was selected using a complex cluster sampling frame with stratified sampling.

Design: trend study

Statistical Analysis

- Basic descriptive statistics were computed using SPSS.
- Before analyses were run, distributions of each variable were examined for skew. All variables with skewness values ≥ 2 standard errors above or below the expected mean of zero were normalized by natural log transformation before any inferential statistical analyses.
- Multilevel random intercept regression models were run in order to examine the influence of community, parental, and individual predictors on adolescent and young adult outcomes.
- To take into account the nested nature of the data, multilevel models using SAS Glimmix procedure for categorical outcomes were conducted.
- Odds ratios served as an indicator of effect size.
- Statistical significance level was set at $P<0.05$ for all analyses.

Data Collection Summary:

Timing of Measurements

Data were collected in three waves: Wave 1 (September 1994 to April 1995), Wave 2 (April 1996 to August 1996), and Wave 3 (August 2001 to April 2002).At Wave 1 respondents were between 11 and 18 years of age. Wave 2 data was collected from these same participants 1 year later. By Wave 3 respondents had reached young adulthood and ranged in age from from 18 to 26 years. Both parents and adolescence were interviewed at home.

Dependent Variables

- Breakfast consumption at Wave 3
- Obesity status at Wave 3

Independent Variables

- Community disadvantage
- Family poverty
- Race
- Gender
- Parent's morning presence in the home
- Breakfast consumption at Wave 2
- Obesity status at Wave 2

Description of Actual Data Sample:

Initial N: n = 7,788 (4,042 female, 3,746 male)

Attrition (final N): n = 7,788

Age: Wave 1= 11 to 18 years, Wave 2 = 12 to 19 years, Wave 3 = 18 to 26 years

Ethnicity:5,823 white (75%) and 1,965 African-American (25%)

Other relevant demographics:12.3% of participants were obese based on BMI in both adolescence and young adulthood.

Location:nationwide

Summary of Results:

Key Findings

- Approximately 64% of study participants reported a parent present in the morning, always or most of the time during adolescence; 26% reported a parent never or almost never present
    - Adolescents who h ad at least one parent present in the morning during adolescence were more likely to eat breakfast (OR=1.23, 95% CI: 1.14 to 1.32) than adolescents who did not have at least one parent present
- 58.7% of adolescents reported eating breakfast at least four times per week; 43.1% reported eating breakfast at least four times per week during young adulthood.
    - Breakfast consumption in adolescence decreased the likelihood of chronic obesity (OR=0.59, 95% CI: 0.52 to 0.68, P<0.001)
    - Chronic obesity was significantly associated with a decrease in the likelihood of young adult breakfast consumption (OR=0.75, 95% CI: 0.68 to 0.83)
- 12.3% of participants were obese in both adolescence and young adulthood
- High levels of community disadvantage substantially decreased the likelihood of adolescent breakfast consumption (odds ratio = 0.85; 95% CI: 0.77 to 0.94). However, community disadvantage did not predict young adult breakfast consumption.
- Higher levels of community disadvantage increased the likelihood of chronic obesity (odds ratio = 1.50; 95% CI: 1.12 to 2.00).
- Family poverty during adolescence was associated with a decrease in the likelihood of adolescents eating breakfast during adolescence (odds ratio = 0.96; 95% CI: 0.94 to 0.99). However, family poverty did not substantially decrease the likelihood for breakfast consumption in young adulthood or increase the likelihood of chronic obesity.
- Parental presence was not significantly associated with chronic obesity (P>0.05).
- African Americans were less likely than whites to eat breakfast in adolescence (OR=0.89, 95% CI: 0.84 to 0.94) and young adulthood (OR=0.83, 95% CI: 0.76 to 0.89)
- Individuals eating breakfast in both adolescence and young adulthood had a lower likelihood of chronic obesity than individuals not eating breakfast in both adolescence and young adulthood (OR=0.41, 05% CI: 0.34 to 0.48)
    - Eating breakfast in adolescence but not young adulthood or vice versa, was associated with a decreased likelihood of chronic obesity (OR=0.69, 95% CI: 0.60 to 0.81; and OR=0.77, 95% CI: 0.64 to 0.94, respectively)
    - Eating breakfast in both adolescence and young adulthood substantially decreased likelihood of chronic obesity in comparison to eating breakfast in adolescence but not in young adulthood (OR=0.58, 95% CI: 0.49 to 0.69)
    - Eating breakfast in both adolescence and young adulthood substantially decreased the likelihood of chronic obeisty in comparison to individuals who ate breakfast in young adulthood but not in adolescence (OR-0.53, 95% CI: 0.41 to 0.68)

Sample Characteristics for Participants (n = 7,788)

Variables	Yes	No
Regular Breakfast Consumption (adolescent)	4,570 (58.7%)	3,218 (41.3%)

Regular Breakfast Consumption (young adult)	3,360 (43.1%)	4,428 (56.9%)
Regular Breakfast Consumption (adolescence and young adult)	2,336 (30%)	5,452 (70%)
Chronic Obesity (in adolescence and young adulthood)	960 (12.3%)	6,828 (87.7%)

Predictor Variables	Adolescent Breakfast Consumption (95% CI)	Young Adult Breakfast Consumption (95% CI)	Chronic Obesity (95% CI)
Community Disadvantage	0.85 (*P*<0.01) (0.77-0.94)	0.89 (0.78-1.01)	1.50 (*P*<0.01) (1.12-2.00)
Family Poverty	0.96 (*P*<0.05) (0.94-0.99)	0.99 (0.95-1.03)	1.07 (0.99-1.16)
Parental presence in adolescence	1.23 (*P*<0.001) (1.14-1.32)	1.03 (0.98-1.10)	0.96 (0.90-1.12)
Regular adolescent breakfast consumption		1.57 (*P*<0.001) (1.46-1.65)	0.59 (*P*<0.001) (0.52-0.68)
African American	0.89 (*P*<0.001) (0.84-0.94)	0.83 (*P*<0.001) (0.76-0.89)	1.35 (*P*<0.001) (1.15-1.58)
Female	0.84 (*P*<0.001) (0.80-0.87)	1.14 (*P*<0.001) (1.07-1.21)	0.68 (*P*<0.001) (0.59-0.78)

Author Conclusion:

This study used data derived from the National Longitudinal Study of Adolescent Health, a nationally representative study of adolescents. Results from this study provide strong support that adolescents who eat breakfast are more likely to continue eating breakfast during young adulthood, Individuals who regularly consume a morning meal are less likely to be chronically obese compared to individuals who never eat breakfast, or only eat breakfast during one developmental period. The findings indicate that parental presence during adolescence indirectly influences young adult breakfast consumption, which is consistent with previous studies on family meals, parental presence, and more healthful food-related habits. A limitation to this study was the inability to assess the quality of breakfast in relationship to other variables as well as location where breakfast meals were consumed. Additional research is needed on the relationship between breakfast consumption and weight status during multiple developmental periods.

Reviewer Comments:

Research Design and Implementation Criteria Checklist: Primary Research

Relevance Questions		
1.	Would implementing the studied intervention or procedure (if found successful) result in improved outcomes for the patients/clients/population group? (Not Applicable for some epidemiological studies)	N/A
2.	Did the authors study an outcome (dependent variable) or topic that the patients/clients/population group would care about?	Yes
3.	Is the focus of the intervention or procedure (independent variable) or topic of study a common issue of concern to nutrition or dietetics practice?	Yes
4.	Is the intervention or procedure feasible? (NA for some epidemiological studies)	Yes

Validity Questions		
1.	**Was the research question clearly stated?**	Yes
1.1.	Was (were) the specific intervention(s) or procedure(s) [independent variable(s)] identified?	Yes
1.2.	Was (were) the outcome(s) [dependent variable(s)] clearly indicated?	Yes
1.3.	Were the target population and setting specified?	Yes
2.	**Was the selection of study subjects/patients free from bias?**	Yes
2.1.	Were inclusion/exclusion criteria specified (e.g., risk, point in disease progression, diagnostic or prognosis criteria), and with sufficient detail and without omitting criteria critical to the study?	Yes
2.2.	Were criteria applied equally to all study groups?	Yes
2.3.	Were health, demographics, and other characteristics of subjects described?	Yes
2.4.	Were the subjects/patients a representative sample of the relevant population?	Yes
3.	**Were study groups comparable?**	N/A
3.1.	Was the method of assigning subjects/patients to groups described and unbiased? (Method of randomization identified if RCT)	Yes
3.2.	Were distribution of disease status, prognostic factors, and other factors (e.g., demographics) similar across study groups at baseline?	Yes

3.3.	Were concurrent controls used? (Concurrent preferred over historical controls.)	N/A
3.4.	If cohort study or cross-sectional study, were groups comparable on important confounding factors and/or were preexisting differences accounted for by using appropriate adjustments in statistical analysis?	Yes
3.5.	If case control or cross-sectional study, were potential confounding factors comparable for cases and controls? (If case series or trial with subjects serving as own control, this criterion is not applicable. Criterion may not be applicable in some cross-sectional studies.)	N/A
3.6.	If diagnostic test, was there an independent blind comparison with an appropriate reference standard (e.g., "gold standard")?	N/A
4.	**Was method of handling withdrawals described?**	Yes
4.1.	Were follow-up methods described and the same for all groups?	Yes
4.2.	Was the number, characteristics of withdrawals (i.e., dropouts, lost to follow up, attrition rate) and/or response rate (cross-sectional studies) described for each group? (Follow up goal for a strong study is 80%.)	Yes
4.3.	Were all enrolled subjects/patients (in the original sample) accounted for?	Yes
4.4.	Were reasons for withdrawals similar across groups?	N/A
4.5.	If diagnostic test, was decision to perform reference test not dependent on results of test under study?	N/A
5.	**Was blinding used to prevent introduction of bias?**	No
5.1.	In intervention study, were subjects, clinicians/practitioners, and investigators blinded to treatment group, as appropriate?	N/A
5.2.	Were data collectors blinded for outcomes assessment? (If outcome is measured using an objective test, such as a lab value, this criterion is assumed to be met.)	N/A
5.3.	In cohort study or cross-sectional study, were measurements of outcomes and risk factors blinded?	???
5.4.	In case control study, was case definition explicit and case ascertainment not influenced by exposure status?	N/A
5.5.	In diagnostic study, were test results blinded to patient history and other test results?	N/A
6.	**Were intervention/therapeutic regimens/exposure factor or procedure and any comparison(s) described in detail? Were interveningfactors described?**	Yes
6.1.	In RCT or other intervention trial, were protocols described for all regimens studied?	N/A

6.2.	In observational study, were interventions, study settings, and clinicians/provider described?	Yes
6.3.	Was the intensity and duration of the intervention or exposure factor sufficient to produce a meaningful effect?	Yes
6.4.	Was the amount of exposure and, if relevant, subject/patient compliance measured?	N/A
6.5.	Were co-interventions (e.g., ancillary treatments, other therapies) described?	N/A
6.6.	Were extra or unplanned treatments described?	N/A
6.7.	Was the information for 6.4, 6.5, and 6.6 assessed the same way for all groups?	N/A
6.8.	In diagnostic study, were details of test administration and replication sufficient?	N/A
7.	**Were outcomes clearly defined and the measurements valid and reliable?**	Yes
7.1.	Were primary and secondary endpoints described and relevant to the question?	Yes
7.2.	Were nutrition measures appropriate to question and outcomes of concern?	Yes
7.3.	Was the period of follow-up long enough for important outcome(s) to occur?	Yes
7.4.	Were the observations and measurements based on standard, valid, and reliable data collection instruments/tests/procedures?	Yes
7.5.	Was the measurement of effect at an appropriate level of precision?	Yes
7.6.	Were other factors accounted for (measured) that could affect outcomes?	Yes
7.7.	Were the measurements conducted consistently across groups?	Yes
8.	**Was the statistical analysis appropriate for the study design and type of outcome indicators?**	Yes
8.1.	Were statistical analyses adequately described and the results reported appropriately?	Yes
8.2.	Were correct statistical tests used and assumptions of test not violated?	Yes
8.3.	Were statistics reported with levels of significance and/or confidence intervals?	Yes
8.4.	Was "intent to treat" analysis of outcomes done (and as appropriate, was there an analysis of outcomes for those maximally exposed or a dose-response analysis)?	N/A
8.5.	Were adequate adjustments made for effects of confounding factors that might have affected the outcomes (e.g., multivariate analyses)?	Yes

8.6.	Was clinical significance as well as statistical significance reported?	Yes
8.7.	If negative findings, was a power calculation reported to address type 2 error?	N/A
9.	**Are conclusions supported by results with biases and limitations taken into consideration?**	Yes
9.1.	Is there a discussion of findings?	Yes
9.2.	Are biases and study limitations identified and discussed?	Yes
10.	**Is bias due to study's funding or sponsorship unlikely?**	Yes
10.1.	Were sources of funding and investigators' affiliations described?	Yes
10.2.	Was the study free from apparent conflict of interest?	Yes